Trig Final (TEST v651)
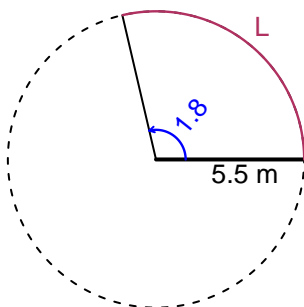
- You should have a calculator (like Desmos) and a unit-circle reference sheet.

Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The radius is 5.5 meters. The angle measure is 1.8 radians. How long is the arc in meters?
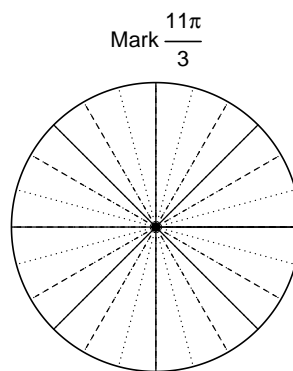

Question 2

Consider angles $\frac{-15\pi}{4}$ and $\frac{11\pi}{3}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{-15\pi}{4}\right)$ and $\sin\left(\frac{11\pi}{3}\right)$ by using a unit circle (provided separately).

Mark $\dfrac{-15\pi}{4}$

Find cos($-15\pi/4$)

Mark $\dfrac{11\pi}{3}$

Find sin($11\pi/3$)

Question 3

If $\cos(\theta) = \frac{-39}{89}$, and θ is in quadrant II, determine an exact value for $\tan(\theta)$.

Question 4

A mass-spring system oscillates vertically with an amplitude of 7.74 meters, a midline at $y = -5.64$ meters, and a frequency of 2.24 Hz. At $t = 0$, the mass is at the minimum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).